**VIEWING V.E. LEPSKIY’S AND S.A. UMPLEBY’S THEORIES**

**OF CYBERNETICS THROUGH THE PRISM**

**OF INTELLECTUAL TRADITIONS**

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**Abstract.** Understanding the differences between scientific approaches to cybernetics is difficult because of the very different histories and intellectual traditions in Russia and the US. This paper, first, describes the peculiarities of the Russian style of scientific thinking in comparison with the American approach. Second, it compares Vladimir E. Lepskiy’s and Stuart A. Umpleby’s theories of cybernetics looking at them through the prism of Russian and American intellectual traditions.

**Key words:**  intellectual traditions; first-order cybernetics; second-order cybernetics; third-order cybernetics.

**The Russian intellectual tradition**

Characterizing the Russian intellectual tradition in comparison with the American intellectual tradition requires describing several points. There are fundamental differences. Among the most important differences, from our point of view, are the following:

1. Different interpretation of some fundamental concepts, for example, the definition of "development". “Development" has been interpreted in the West mostly in terms of technology and science (a technocratic view of the term). Technological progress is a mainstream idea. But Russian civilization interprets “development” as transfiguration, self-perfection, vanquishing sin in people (a spiritual view of the problem). [Platonov, 2010]

2. The scientific implications of such a different understanding of fundamental ideas can be illustrated by the American and Russian development of the idea of I.P. Pavlov on the "conditioned reflex". Pavlov discovered a conditioned reflex while experimenting with animals as *a physiologist*. Later he learned that American *psychologists* were experimenting in the same way. He wrote about the difference between his work and the American work by noting that the practical American mind found that it is more important to know the *external* behavior of a man, than to guess about his *internal* state. The American science of behavior teaches us *to act in the right (instrumentally successful) way*. Russian psychology teaches us *to make right (ethical) decisions*.

3. Many Russian scientists often used a different foundation for their process of thinking. They strived to build a better world, to include ethics and spirituality in scientific theories (N.A. Berdyaev, N.G. Chernyshevsky, and others). The first systematic critiques of classical rationalism as a scientific position were formulated in Russia. (Although rationalism led us to the gate of truth, it is fated not to open the gate. I. Odoevsky). Russians feel a need to understand the world as a whole. Therefore, they emphasize different patterns in the world, society and nature than are emphasized in the Western intellectual tradition. For example, academician N.N. Moiseev stressesed that the formation of a global collective consciousness lays the foundation for the development of an information society. He wrote: "The notion of collective consciousness is a fundamental notion of civilization... Civilization itself could not emerge without development of a collective consciousness. This phenomenon emerges as an effect of the necessity and possibility of information exchange among individual consciousnesses, evolution of collective memory and organisation of collective efforts in decision making." [Moiseev, 2000] Western academics are more likely to speak about “shared beliefs and values’ rather than a “collective consciousness.”

4. Russians prefer a systematic approach and have a tendency to create general theories. Examples are such well-known names as N.I. Lobachevsky, D.I. Mendeleev, A.A. Bogdanov, N.F. Fedorov, V.I. Vernadsky, K.E. Tsiolkovsky and others.

Hence, Russian scientific thinking can be characterized by thesystems approach, a striving to create general theories, including a moral component in them, and acceptance of irrationality.

**Comparison of V.E. Lepskiy’s and S.A. Umpleby’s theories of cybernetics**

Understanding the differences in intellectual traditions leads us to a deeper understanding of the theories of cybernetics of V. Lepsky and S. Umpleby as representatives of these scientific traditions. Table 1 presents a description of the development of cybernetics, made by S. Umpleby.

Table 1 **- Three versions of cybernetics**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Engineering Cybernetics** | **Biological Cybernetics** | **Social Cybernetics** |
| The view of epistemology | A realist view of epistemology: knowledge is a “picture” of reality | A biological view of epistemology: how the brain functions | A pragmatic view of epistemology: knowledge is constructed to achieve human purposes |
| A key distinction | Reality vs. Scientific Theories | Realism vs. Constructivism | The biology of cognition vs. the observer as a social participant |
| The puzzle to be solved | Construct theories which explain observed phenomena | Include the observer within the domain of science | Explain the relationship between the natural and the social sciences |
| What must be explained | How the world works | How an individual constructs a “reality” | How people create, maintain, and change social systems through language and ideas |
| A key assumption | Natural processes can be explained by scientific theories | Ideas about knowledge should be rooted in neurophysiology | Ideas are accepted if they serve the observer’s purposes as a social participant |
| An important consequence | Scientific knowledge can be used to modify natural processes to benefit people | If people accept constructivism, they will be more tolerant | By transforming conceptual systems (through persuasion, not coercion), we can change society |

Source: [Umpleby, 2005, p. 66]

In spite of the fact that the table is called "Three versions of cybernetics," Western scholars only single out cybernetics of the first and second orders. Cybernetics of the second order includes a biological and social version. It arose from "experimental epistemology." The goal was to understand the processes of cognition on the basis of neurophysiological experiments, as a result of which cyberneticians came to the conclusion that the observer cannot be excluded from science.

The Russian interpretation of second-order cybernetics is different from the Western concept of it. Table 2 presents a description of Lepskiy's theory using Umpleby’s criteria.

 Table 2 – **Description of V.E. Lepskiy's theory using S.A. Umpleby’s criteria**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **1st order cybernetics** | **2d order cybernetics** | **3d order cybernetics** |
| Leading scientific paradigm  | Subject – Object  | Subject – Subject  | Subject – Meta Subject  |
| The dominant approach | Activity approach | Subject-activity approach | The subject-oriented approach |
| Type of scientific rationality | Classical type of scientific rationality  | Non-classical type of scientific rationality  | Post-non-classical type of scientific rationality  |
| The view of epistemology | A realist view of epistemology: knowledge is a “picture” of reality | Knowledge depends on the methods and means that the subject (observer) of the activity uses  | Knowledge depends on the meta subject and its values, goals (meta-observer: family, group, organization, country, etc.)  |
| A key distinction | Reality vs. Scientific Theories | Positivism vs. philosophical constructivism  | Positivism vs. Humanistic constructivism;Emphasis on communication processes |
| The puzzle to be solved | Construct theories which explain observed phenomena | Include the observer within the domain of science  | Reconcile intrascientific and social values and goals with the comprehension of value orientations of the subject (observer) of scientific activity |
| What must be explained | How the world works | Reflection as a new dimension | How the self-developing reflexive active environment works |
| A key assumption | Natural processes can be explained by scientific theories | The subject's goals and values are included through the choice of methods and means of studying the object  | Freedom as acceptance  |
| An important consequence | Scientific knowledge can be used to modify natural processes to benefit people | Scientific knowledge can influence the phenomenon being studied | Scientific knowledge can be used to implement the idea of co-evolution: the coordinated evolution of nature and humanity as equal partners |

Source: developed by the author

The development of the conception of third-order cybernetics is based on Russian ideas: the activity approach, the typology of scientific rationality, the inclusion of the moral component, etc., are not well known in the West, which leads to some misunderstanding of concepts.

**Conclusions**

Briefly, the main differences between the theories of V.E. Lepskiy and S.A. Umpleby, from my point of view, are the following:

- The American vision of second order cybernetics includes biological and social versions; the development of cybernetics takes place within the framework of the paradigms of classical and non-classical rationality;

- The Russian vision of second order cybernetics excludes from consideration the biological version, in fact, reducing second order cybernetics to the cybernetics of the individual subject (observer) and, indirectly, its values ​​(through the choice of methods and means of studying the object), in contrast to the third-order cybernetics concept with its focus on the social (meta subject);

- Western scholars do not consider third-order cybernetics to be necessary, since the inclusion of an observer (subject) in the field of science, from their point of view, solves the problem of including social values ​​and goals into consideration [Medvedeva & Umpleby, 2003];

- It seems that V. Lepskiy’s theory of the third-order of cybernetics develops in the direction of typically Russian ideas: "noosphere", "collective consciousness", "co-evolution", etc., i.e. it is not just social cybernetics, but cybernetics of environments, and probably one can say cybernetics of nature.

The presented differences demonstrate the great potential for ideas from Russian and Western scientists to enrich the further development of cybernetics and science in East and West.

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